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PLANT CELL WALL — A GREEN FUTURE STRUCTURE

Summary

A distinguishing feature of plant and algae cells is the presence of a cellulose-rich wall. For three hundred years plant cell walls were described as static and rigid. Today cell walls are considered as very dynamic structures which enclose each cell still allowing transfer of solutes and signaling molecules between the cells themselves and the cells and environment, control of cells and the whole plant form, growth and development; they play also a significant role in plant defense and their responses to environmental stresses. To fulfill these functions plant cell walls must be a tightly regulated dynamic system in charge of sensing, processing and responding to internal and external cellular signals, functioning as an "intelligent frontier" capable to co-ordinate growth of the whole-plant by optimizing growth and differentiation of individual cells. This paper attempts to review a small part of current works aimed to elucidate the role and functions of plant cell walls and their practical implications for obtainment of plant-based products: food, fodder, textiles, paper, biopolymers and biofuels.